

Acoustics Consultant:	NAGATA ACOUSTIC, Inc.
Architect:	Maki & Associates
Owners:	Tsuda Jukukai Institute
Sound & Communications:	NAGATA ACOUSTIC, Inc.
Construction Cost:	¥ 1,900 Million JPY (approx.)

Tsuda hall was constructed as the main hall in the building of Tsuda Jukukai Institute near Japan Railroad's Sendagaya station in Tokyo. It was designed to be a concert hall for recitals and chamber music as well as a lecture hall for the educational facilities.

The hall has a sloped floor, curved side walls and sloped ceilings. The compatibility of a lecture hall and a concert hall is found to be successful and the Hall has become popular as one of the best recital halls in Tokyo.

### ACOUSTICAL DESIGN

The subjects of the acoustical design were:

- (1) Control of the traffic noise from the freeway and rail ways running 30 ~ 50m away from the building
- (2) Design goal of the reverberation time of two-purpose hall
- (3) Design of loudspeaker systems which harmonize with the interior of the auditorium

In carrying out the project, the reconciliation of the architect's design goals with the acoustical requirements was a big problem in the design work.

The main acoustical object was to obtain both speech intelligibility and rich reverberation for classical music concerts. In order to obtain speech intelligibility, rich reverberation and room impression in the auditorium, a reverberation time of 1.4 second was set as a goal. A room volume of 9.2m<sup>3</sup> per seat and a nearly rectangular plan with wavy side walls for diffusion and sloped ceiling were proposed.

The diffusing surfaces with rough finishes were recommended to the side walls to obtain soft, gentle acoustics by decreasing the harsh lateral reflections.

The two loudspeaker clusters at the upper galleries cover the entire area of the audience.

### BUILDING DETAILS AND ACOUSTICS DATA

Location 1-18-24 Sendagaya Shibuya-ku,  
Tokyo 151-0052, Japan

Tel 03-3402-1851

Seating Capacity 490

Room Volume 4,500CM

Surface Area 1,800SM

Stage Area 105SM

Reverberation Time (Mid-Frequency)

Unoccupied 1.5sec

Occupied 1.4sec

Finishing Materials

Ceiling : 2 layers of gypsum board (12mm x 2)  
+ a sheet of lead (2mm)

Upper Wall : 2 layers of glassfiber reinforced gypsum  
board (12mm x 2-3)

Lower Wall : 25mm marble on precast concrete panel

Floor : 15mm wooden board on concrete

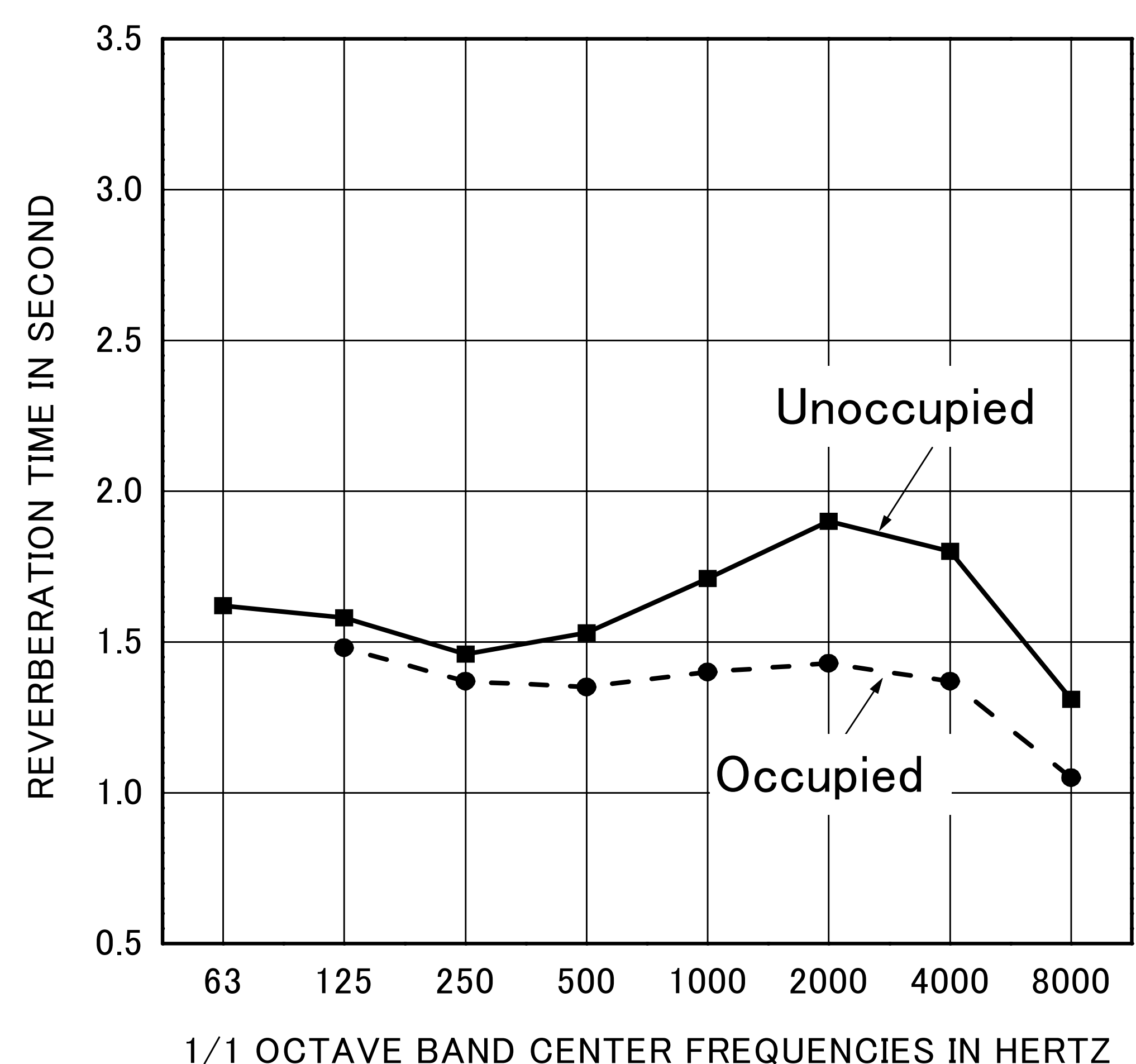
Seat : Upholstered

Noise Level : NC-20

Other Facilities : Rehearsal room (32SM)

Total Cost : ¥ 1,900 Million JPY (approx.)

Total Floor Area : 4,699SM

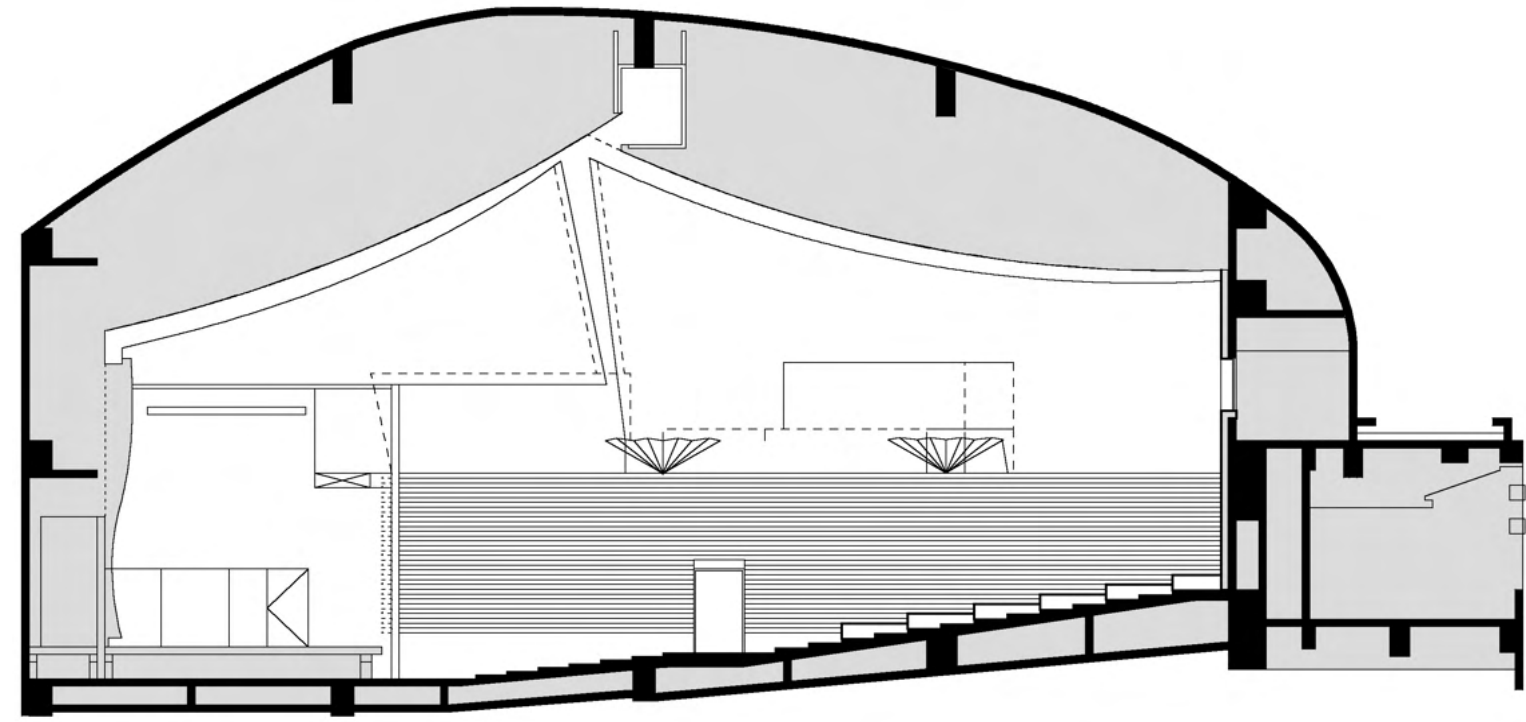


**REVERBERATION TIME**

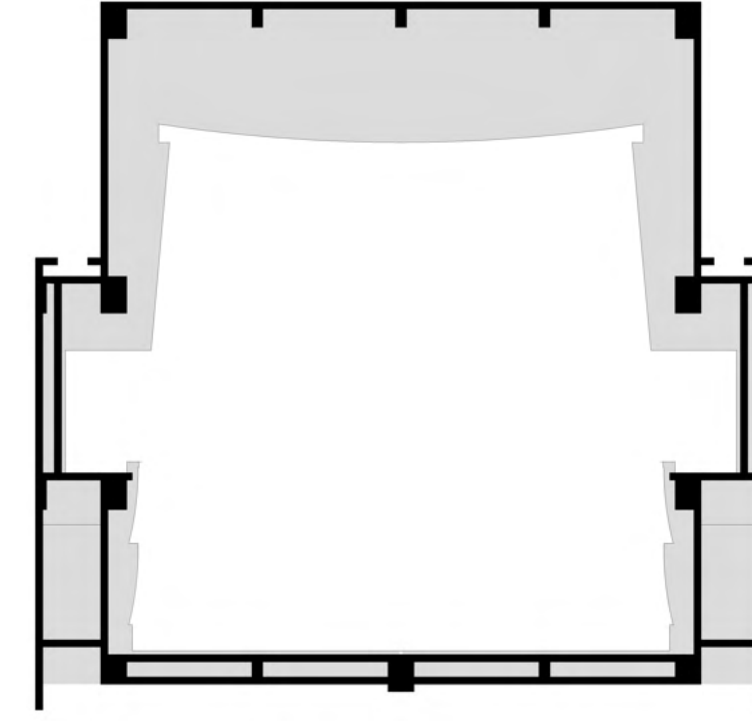
# TSUDA HALL

TOKYO, JAPAN  
1988

NAGATA  
ACOUSTICS



LONGITUDINAL SECTION

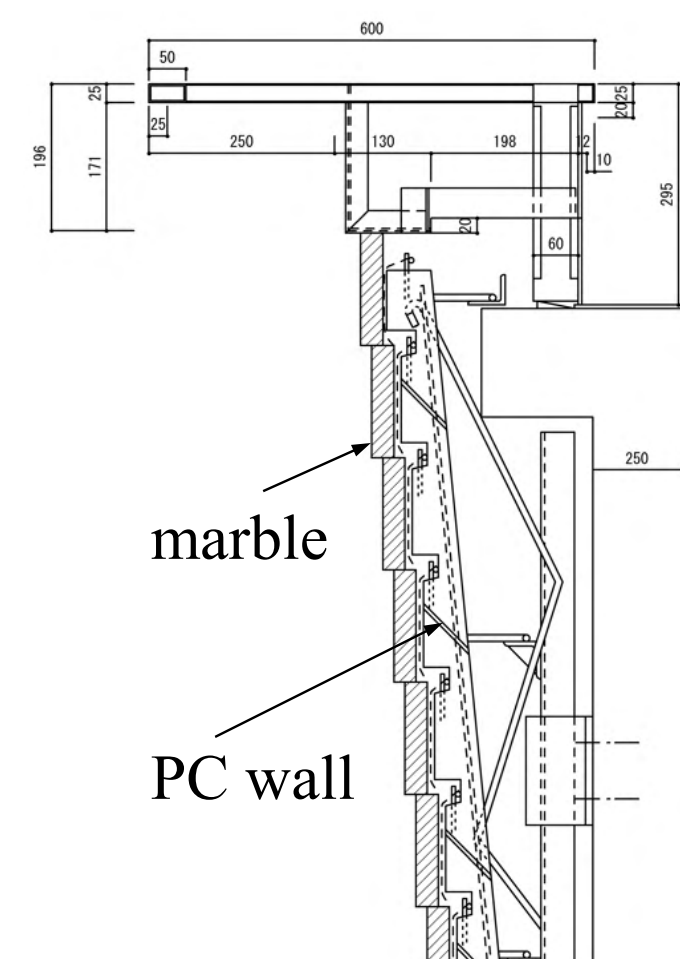


TRANSVERS SECTION



0 5 10 15 20 METERS

PLAN



SIDE-WALL